



August 22, 2022

The Honorable Stephanie Pollack
Deputy Administrator, Federal Highway Administration
U.S. Department of Transportation
1200 New Jersey Avenue, SE
Washington, D.C. 20590
Docket: FHWA-2022-0008

Re: Rivian Comments on Notice of Proposed Rulemaking for the National Electric Vehicle Infrastructure Formula Program

Dear Deputy Administrator Pollack,

Rivian thanks the Federal Highway Administration ("FHWA") for the opportunity to respond to the Notice of Proposed Rulemaking ("NPRM") for the National Electric Vehicle Infrastructure ("NEVI") Formula Program.

Rivian is an independent U.S. company on a mission to "Keep the World Adventurous Forever" through the design, development, manufacture and distribution of class-leading all-electric trucks, sport utility vehicles ("SUVs") and delivery vans. Our R1T pickup, R1S full-size SUV, and commercial delivery van all displace the heaviest-polluting passenger vehicle segments on US roads today. The R1T, our flagship vehicle, was the first all-electric pickup available in the U.S. market and has won numerous awards and accolades, including being named MotorTrend's 2022 Truck of the Year. In addition to vehicles, Rivian is also building out two complementary charging networks to support transportation electrification nationwide, the Level 2 Rivian Waypoints Network and the DC Fast Charging ("DCFC") Rivian Adventure Network.

As both an automaker of all-electric vehicles and charging station network provider, Rivian offers the following commentary to FHWA for consideration in further refinements to the NEVI proposed rulemaking.

Procurement Process Transparency

Adhering to the standards set in 23 U.S.C. 112 should facilitate a transparent, equitable, and competitive procurement process as states administer funds from the NEVI program to project applicants. However, any requirement to publicly disclose the financial summary of contract payments and price setting inputs should be calibrated to protect confidential business information ("CBI").

We appreciate FHWA's sensitivity to CBI by specifying that contract payments data be "suitable for public disclosure." However, given the range of State laws and interpretations of these provisions, we encourage FHWA to consider the following:

- Define "suitability for public disclosure"
- Ensure data is aggregated and anonymized prior for public disclosure
- Ensure CBI is properly and securely stored based on government best practices and exempt from public disclosure requests to the greatest extent allowed by law
- Include a "suitable for public disclosure" standard in Section 680.106 (a)(vi) regarding price setting
- Clarify the requirement to disclose "any information" regarding how prices are set (Section 680.106 (a) (vi))

While disclosing price-setting information may be intended to promote transparency, these inputs are often highly confidential, reflecting a company's unique business strategies. Such inputs may include projected utilization, estimated operations and maintenance costs, and a site's relative place in the competitive charging ecosystem. These inputs reflect unique business assessments that may be difficult to extract from financial models. Given the challenges of operating a profitable charging business at this stage in the industry's evolution, publicly disclosing detailed insights into price setting could negatively impact EVSE companies and the industry writ large.

Minimum Number and Type of Chargers

Rivian supports the proposed minimum of four DCFC ports capable of dispensing at least 150 kW simultaneously. As four chargers is only a floor, applicants may propose additional chargers at sites with greater expected utilization. Four ports is a reasonable minimum for sites with lower expected utilization. This standard allows States to assess sites individually, and make planning decisions that contemplate grid capacity, expected utilization, and existing infrastructure to maximize the impact of NEVI funds.

Connector Types

Rivian applauds FHWA's proposal to require only CCS, and limit CHAdeMO connector eligibility to only the first year of program funding. Rather than a viable alternative to CCS or widespread proprietary connectors, CHAdeMO is more akin to 8-track and Betamax – obsolete technologies that even at their heights failed to reach the ubiquity or viability of their technological peers. Only one full Battery Electric Vehicle ("BEV") model sold nationally in the US (the Nissan Leaf) has ever relied on CHAdeMO for fast charging. More than half of those sold to date were between Model Years 2010 and 2015, the range of which, when brand new and under perfect conditions, maxed out at 84 miles.¹ Nissan has announced its intention to phase out the Leaf, and that its next-

¹ <https://afdc.energy.gov/data/10567>

generation BEVs will adopt CCS as its charging standard.² Requiring any CHAdeMO connectors at federally funded sites would increase costs without driving EV adoption, reducing the ability of federal infrastructure programs to meet American charging needs.

Power Level

Rivian strongly supports the current guidance setting a power level floor of 150 kW to enable a strategic and balanced approach to infrastructure deployment. This floor is well-calibrated to facilitate EV expansion by considering driver needs, grid upgrade costs and expected utilization on a site-by-site basis. Given the significant variance in grid capacity and utilization rates across the country, it is critical to maintain this floor. The Rivian R1T and R1S have some of the largest battery capacities (135 kWh) among consumer EVs on the road today and are both capable of accepting charging speeds in excess of 150 kW. However, due to factors like temperature, origination state of charge, and cell derating, the time saved per charging session by higher rates of charge may actually be de minimis from the driver perspective. This is especially true of corridor travel, when stops are often accompanied by bathroom breaks, food and beverage purchases, or leisure activities. Further, data cited by the International Council on Clean Transportation show a nearly two-fold increase in per-charger cost when increasing power levels from 150 kW to 350 kW³. As increased power levels directly correlate with increased infrastructure deployment cost, requiring even one charger to dispense as high as 350 kW would necessarily reduce the number of stations able to be deployed under NEVI. This tradeoff is simply not worth the likely minimal potential time savings of higher power under real world conditions.

Smart Charge Management

Overall, Rivian supports the requirement for chargers to enable smart charge management capabilities via OCPP to enable several potentially valuable applications. However, we encourage FHWA to provide additional clarity on the following topics in future guidance:

Power level requirements for sites with more than four ports

If site hosts deploy more than four ports per site, ***we encourage FHWA to clarify those additional ports need not be simultaneously capable of providing at least 150 kW and can use smart charge management technologies to manage their power levels.*** If additional ports beyond the initial four must also provide a minimum of 150 kW, it could trigger additional grid upgrades or costly demand charges. These impacts represent significant cost barriers and could disincentivize investing in more than four ports per site, creating a missed opportunity to deploy more chargers and serve more drivers.

Refine the smart charge management definition

² <https://insideevs.com/news/433929/nissan-switches-to-ccs-in-us-europe/>

³ Estimating electric vehicle charging infrastructure costs across major U.S. metropolitan areas. ICCT. 2019. https://theicct.org/sites/default/files/publications/ICCT_EV_Charging_Cost_20190813.pdf

We encourage FHWA to refine its definition of smart charge management in the guidance to ***decouple the concept of controlling the amount of power dispensed by chargers from responding to external power demand signals***. Charging providers can and will control power dispensed while still meeting the 150 kW power floor without external signals playing a role. Critically, highway corridor charging is focused on delivering a customer experience of short dwell times and reliable power delivery, as emphasized by FHWA's uptime requirements and minimum power level of 150 kW. In many instances, however, responding to external power demand signals runs contrary to providing a consistent, reliable customer charging experience.

EV drivers arrive at fast charging stations expecting the amount of time spent charging to correlate with the advertised power capacity of the station. External power demand signals reduce expected power capacity, typically to help reduce grid load during times of stress, without a clear pathway to communicate to EV drivers to adjust their expectations. Although managing demand during times of grid stress is critically important, Rivian encourages FHWA to recognize fast chargers, as critical fueling infrastructure, should not be assumed to respond to external power demand signals. Therefore, we encourage FHWA to explicitly acknowledge that participation in external programs should be optional and at the discretion of the charging provider. This clarification will help avoid any confusion on the State level and ensure consistency with the program's overarching goal of creating reliable charging experiences for EV drivers.

Station Availability

Ensuring that NEVI-funded charging stations are open to the public "24 hours a day, seven days a week, and on a year-round basis with minor exceptions" is critical to ensure a reliable experience for EV drivers. FHWA's proposal to not count "isolated or temporary disruption" due to "maintenance and repairs" of EVSE against such operational requirements is appropriate. However, it would be helpful for FHWA to further define "minor exceptions" for purposes of this provision. If left unclarified (or if exceptions are inadequate), EVSE owners and operators could be penalized for circumstances beyond their control. We therefore encourage FHWA to publish specific examples of "minor exceptions" during their final rulemaking. We recommend FHWA consider at least the following for specific inclusion:

- Scheduled maintenance at site location
- Natural disasters including but not limited to floods
- Vandalism
- Other unforeseen circumstances

Station Payment Methods

Rivian strongly supports the guidance as currently written, specifically regarding contactless payments as the minimum standard. The broad range of industry data provided in FHWA's Preliminary Regulatory Impact Assessment ("PRIA") analysis of the NPRM demonstrates a clear trend toward contactless technology. A frequently-cited report inaccurately suggests that data

from Mastercard projects only 25% of payment cards would be contactless by 2023.⁴ This is a misapplication of Mastercard's data, which came from a 2018 report projecting 25% adoption by 2021, and framing this threshold as a turning point for the "accelerated growth" of contactless adoption.⁵ This accelerated growth has come to pass even faster than expected, due in part to the impacts of the COVID-19 pandemic.⁶ Now, the American Bankers Association projects 87% of debit cards will be contactless by the end of 2022.⁷ Pew Research estimates 85% of Americans owned a smartphone at the end of 2021, establishing even more options for contactless payments.⁸ This evidences a critical mass of contactless payment options via debit cards and smartphones already in the market, providing clear assurance drivers will have adequate methods to pay for charging.

Given contactless adoption rates, additional payment methods would introduce more cost and impact station reliability without meaningfully increasing access. Analysis conducted by the California Air Resources Board in 2019 indicates the addition of EMV chip readers would add \$371 per card reader and \$270 per reader per year in maintenance costs.⁹ These estimates are likely low in the current environment of supply chain delays, inflation and the Bipartisan Infrastructure Law's "Buy America" requirements. In addition to the cost, EMV chip readers specifically expose charging hardware to an additional failure point that would impact overall station reliability, one of the key tenets of the NEVI program.

Although some push older payment technologies as a pathway to increase EV utilization among unbanked and underbanked communities, there is scant evidence to support this assertion. However, several other lower cost solutions within the parameters of the NEVI program guidelines may be more likely to improve access for these populations. These could include free digital accounts, discount codes for charging sessions, or the ability to load a prepaid card to a phone or app. These lower cost options should be given an opportunity to succeed before requiring costly or outdated alternatives which may in reality provide little or no discernible benefit.

Security

Streamlining payment processes, including the use of "Plug and Charge" technology, will provide drivers with a seamless, convenient charging experience. However, significant concerns exist in the industry regarding the robustness of the existing ISO 15118 Public Key Infrastructure (PKI),

⁴ <https://ww2.arb.ca.gov/sites/default/files/2022-02/EVSE%20Standards%20Technology%20Review%204Feb22.pdf>

⁵ <http://interactivecontent.mastercard.com/mastercard-us/contactless-cards-impact/p/1>

⁶ <https://www.mastercard.com/news/press/press-releases/2020/april/mastercard-study-shows-consumers-globally-make-the-move-to-contactless-payments-for-everyday-purchases-seeking-touch-free-payment-experiences/>

⁷ <https://www.aba.com/-/media/documents/industry-insights/community-banks-and-the-contactless-economy.pdf?rev=42f557ee001542c6996f50ec07bab20a#:~:text=At%20the%20end%20of%202019,2022%2C%20according%20to%20the%20study.>

⁸ <https://www.pewresearch.org/internet/fact-sheet/mobile/>

⁹ <https://www.regulations.gov/comment/FHWA-2021-0022-0477>

specifically in relation to secure payment processing. To grow the country's charging infrastructure to the desired scale, it is critical for the industry to have the ability to leverage a secure, interoperable and non-proprietary PKI system and not be tied to the inadequate PKI currently leveraged under ISO 15118. Therefore, we encourage FHWA to:

- Clarify in the technical guidance which portions of the ISO 15118 standard are applicable to enabling Plug and Charge capabilities, including charging controls and ISO message flows
- Provide charging station operators the flexibility to **not** implement the existing ISO 15118 PKI and pursue more robust security frameworks to process payments. Explicitly enabling this flexibility will avoid undercutting innovative efforts currently under way by industry players

Maintenance

"At least five years" is an appropriate minimum timeframe for funded infrastructure to remain compliant with NEVI standards. After five years, some flexibility is warranted to maintain, support, upgrade, replace, or retire installed hardware. By allowing for this flexibility, States can assess the needs of certain sites and determine the best path forward.

When possible, the charging infrastructure funded by NEVI should remain operational beyond five years. This would be consistent with the lifecycle of charging equipment, which often lasts up to ten years. After the five-year window lapses, subjecting projects to Title 23 requirements would be appropriate only if EVSE vendors continue to receive financial support for operation and maintenance.

Workforce Licensing

While Rivian applauds FHWA for including multiple pathways for certification of a "qualified technician", it will require a sustained effort from FHWA and States to ensure an adequate supply of electricians and EVSE field maintenance technicians (technicians) are available to meet the substantial increase in demand for charging infrastructure installation, operations, and maintenance. We strongly encourage FHWA to advise States to assess their current supply of "qualified technicians" (trained under EVITP or any other existing "Registered Apprenticeship Program"). If the supply is not deemed currently sufficient to meet anticipated demand, FHWA should encourage States to acknowledge the supply issue under the *Known Risks and Challenges* section of their deployment plans (if they have not done so already) as well as outline specific actions to facilitate an increase in the pipeline of trainees. Such actions should include, at a minimum, partnering with technical schools, community colleges and other technical or community-based organizations to expand testing throughout diverse geographies, increasing availability of online training and testing, and subsidizing the cost of such training. If it is determined certain States (or regions within States) do not have an adequate supply of "qualified technicians" to meet expected demand, we strongly urge FHWA to evaluate short-term (1-2 year) waivers be granted for this provision. Until a critical mass of "qualified technicians" is available

nationwide, this requirement risks delaying or preventing fast charging from being installed and maintained.

In addition, we encourage FHWA to consider the following proposals for updated guidance:

Clarify electricians do not have to be present for technicians to conduct operations and maintenance work. Most operations and maintenance (O&M) work on EV charging stations do not require electrical work. Examples of routine operations and maintenance work includes repairing cable management systems, electronic equipment diagnostics, communications and cell signal testing, troubleshooting, calibrating, upgrades, reprogramming, parts/whole unit replacement, preventative maintenance and restoration. Rarely will a charging station need electrical or “hot wire” work post installation. In the case that it does, EVSE Field Maintenance Technicians are trained to recognize and escalate it to qualified electricians and/or to the charging companies directly.

Clarify technicians can do low-risk electrical work if it's related to operations and maintenance. When performing common operations and maintenance work, technicians sometimes engage in incidental low-risk electrical tasks, such as shutting off a circuit breaker or cycling breakers. These tasks are covered during standard safety training for technicians via common commercial fire and electrical courses, such as OSHA and Lock Out Tag Out. These training courses cover the processes to safely shut off power and test for the presence of voltage prior to commencing O&M work. Rivian therefore recommends FHWA clearly define “incidental low risk electrical work” as work that does not require a “qualified technician” and includes shutting down the breaker box or cycling the breakers needed to conduct O&M work.

Adding further clarification on these two points will reduce potential workforce bottlenecks and reduce unnecessary operations and maintenance labor costs.

Customer Support

Drivers’ ability to “report outages, malfunctions, and other issues with charging infrastructure” is critical to building a seamless and reliable charging experience. A monitored phone line for incident support and resolution would promote strong customer service. Making such a phone number readily available to troubleshoot and resolve reported issues, should render unnecessary an emergency call box or other such physical infrastructure on site intended to achieve similar objectives.

Program Income

While reinvesting net income into charging equipment and related activities may be a generally fair stipulation to receiving NEVI funds, further defining a “reasonable rate of return” would help provide certainty and structure to program participation. Although these requirements mimic

those found in 23 U.S.C. 129 for toll roads, bridges, tunnels, and ferries, there are several critical differences between such large-scale transportation infrastructure and EV charging. EVSE vendors must compete for business, so highly regulated pricing structures could impact charging providers' ability to see any "reasonable rate of return" in their investment. The EV charging industry is still young. As such, companies continue to experiment with business models and pricing structures to make the economics work and the businesses profitable. As EV adoption grows and fee structures adjust, establishing a "reasonable rate of return" that is too low could risk limiting private interest in the program. Therefore, Rivian encourages FHWA to:

- Factor the differences between the infrastructure enumerated in 23 U.S.C. 129 and electric vehicle charging equipment in establishing program income requirements
- Limit "reasonable rate of return" rules to five years, consistent with other program requirements
- Rely on evolving market conditions to determine a "reasonable rate of return"

Data Submittal

Rivian strongly supports FHWA's proposal for the Joint Office to coordinate data submission and maintain an online portal for all data required under § 680.112. Data submission processes, paperwork, and interfaces should be consistent. This consistency is likeliest with the Joint Office managing the process.

As important as managing this data is its protection. Developing a consistent protocol for storing, managing and analyzing the data across jurisdictions is essential, especially given some of the data required under § 680.112 is likely CBI. Requiring quarterly submission of data regarding maintenance, repair, and property acquisition costs is particularly troublesome as these categories typically fall under CBI. If such data must be collected, ***we strongly encourage the Joint Office to establish strong parameters for its collection, storage, and analysis.*** At a minimum, any such data should be anonymized and aggregated prior to dissemination or publication.

Charging Network Connectivity

If FHWA is going to reference specific protocol versions as a program requirement, we encourage the inclusion of "or higher" language in order to establish a version "floor" while also allowing for continued innovation across the industry. For example, OCPP 2.0.1 is incorporated by reference under § 680.120 (c) (1) as the requirement for all charging stations funded under NEVI. We suggest the language is updated to reference OCPP 2.0.1, ***or higher.*** For any future updates to the required "floor" version of OCPP (or other protocols in the guidance), we suggest a transition period of 12-18 months to allow the industry reasonable time to adapt.

Information on Public Charging Locations

Rivian recognizes the potential benefits of making certain data available for free to third party software developers. This requirement would enable the aggregation of all NEVI-funded charging stations onto third party platforms, thus effectively creating a one-stop shop for EV drivers to reference. While beneficial from the driver perspective, the requirement as currently written could have unintended consequences for charging network providers, who will incur notable costs to provide this data to third party entities. These third parties could then leverage the data for their own commercial interest.

Rivian recommends FHWA further specifies the following regarding the data required to be provided to third parties, including:

- Define “third-party software developers” to clarify what entities are intended to have access to the required data (i.e. mapping applications)
- Define how third-party software developers are allowed to use the data
- Clarify developers are barred from selling the data themselves or selling a service that uses the data.
- Clarify any analysis of the data intended to be released publicly must be anonymized and aggregated
- Allow charging networks to recover basic costs for making the data available through an API and maintaining that API on an ongoing basis. This is of particular importance for the required real-time data metrics which will necessitate significant investment in server capacity to enable access to multiple third parties

The addition of the above guardrails on the usage of data provided to third parties will help ensure the reasonable use in line with the overall intentions of the NEVI program.

Rivian thanks FHWA for the opportunity to provide our perspective, and for FHWA’s critical leadership in executing the President’s ambitious goals to leverage vehicle electrification to fight climate change. The NEVI program is unprecedented in its scale, scope, and opportunity to drive EV adoption and eliminate barriers to electric transportation. We are eager to answer any additional questions FHWA may have, and we look forward to working together on NEVI’s successful implementation.

Sincerely,

Corey Ershow

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Rivian Automotive, LLC